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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,863	12/08/2003	Jar-Wha Lee	030716.002	6797

34142 7590 06/04/2007

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EXAMINER	
BAREFORD, KATHERINE A	
ART UNIT	PAPER NUMBER
1762	
MAIL DATE	DELIVERY MODE
06/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,863	LEE, JAR-WHA	
	Examiner	Art Unit	
	Katherine A. Bareford	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *22-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/07,12/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-21 in the reply filed on May 1, 2007 is acknowledged. The traversal is on the ground(s) that the two groupings are not properly "independent" as required and that the unsupported allegation by the Examiner is not believed to be sufficient to support the required demonstration that the claimed inventions have no disclosed relationship. This is not found persuasive because, firstly, as to the requirement of "independent" inventions, without a disclosed relationship, the Examiner notes that as discussed in MPEP 803, the claims of an application "may properly be required" if they are "either independent . . . or distinct". See also MPEP 806 and 806.05. Thus, as these claims involve a process and apparatus for its practice, they are not independent as discussed in MPEP 802.01.I, but are related but distinct as discussed in MPEP 802.01.II, and as discussed in MPEP 803 can properly be restricted on that basis. As to the "unsupported allegation" by the Examiner of distinctness, as discussed in MPEP 806.05(e), when making a restriction between a process and apparatus for its practice, the "burden is on the examiner to provide reasonable examples that recite material differences." There is no requirement that art be cited. Here it is clear that the apparatus can be used with single filament material or tubing. However, the Examiner notes, as a courtesy, that Suzuki et al (US 4086374), for example shows an apparatus with an immersion bath and rollers for guiding a web of

polymer material film (figure 3, column 4,lines 10-20 and 60-65), which shows the well known use of non-multifilament materials passing around direction changing rolls.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 22-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on May 1, 2007.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) the use of the PPTA filaments of claim 17 is not provided in the specification.

(2) the use of the common speed of claim 19 is not provided in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clayton et al (US 3460978).

Clayton teaches a method of treating the surfaces of individual filaments in a multifilament yarn (strand). Figures 1-2 and column 1, lines 10-40. The yarn is immersed into a liquid treatment solution and the exposed surfaces areas of the individual filaments will be coated with the treatment solution. Figures 1-2 and column 1, lines 25-70. Clayton further teaches disrupting the orientation of the individual filaments (by changing the direction of the yarn movement) and coating all newly exposed surface areas of each individual filament with the treatment solution. Figures 1-2 and column 1, lines 25-70. The disrupting step is repeated a number of times by repeated direction changes to the yarn. Figure 2 and column 1, lines 64-70. Then the yarn is withdrawn from the treatment solution. Figures 1-2 and column 2, lines 20-40. The yarn can be made of various materials including glass and polymers such as nylon

and Orlon. Column 1, lines 70-72. Any type of coating can be applied, including resin, metal, sizings, etc. Column 1, line 70 through column 2, line 3.

As to the 35 USC 102(b) rejection: Clayton does not explicitly state to repeat the disrupting step until a predetermined coating level is reached, however, a set number of bend cycles (repeats) is used, which means that this number provides the desired amount of coating.

As to the 35 USC 103 rejection: Clayton does not explicitly state to repeat the disrupting step until a predetermined coating level is reached, however, a set number of bend cycles (repeats) must be selected from the possible number that can be used, which suggests performing routine experimentation to optimize the number of bend cycles, which would be based on whether the desired coating conditions have been reached.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton et al (US 3460978).

Clayton teaches all the features of this claim, as discussed in the rejection of claim 1 using Clayton above, except imparting a predetermined amount of tension to the yarn.

However, Clayton also teaches that to perform the coating the yarn is unrolled from a drum, passed through the bath around rollers and then rewound on a drum. Figures 1-2 and column 2, lines 20-30.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton to provide a predetermined amount of tension on the yarn, since Clayton requires the unrolling, passing and rewinding actions that would require some degree of tension on the yarn and the speed of pulling of the yarn, which would coordinate with the tension, is also well known to affect the coating amounts applied, and therefore one of ordinary skill in the art would perform routine experimentation to optimize the speed and tension on the yarn.

8. Claims 2, 6, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton as applied to claim 1 above, and further in view of Suzuki et al (US 4086374).

Clayton teaches all the features of these claims except (1) that the liquid does not contain a surfactant (claims 2, 7), (2) that the treatment solution is continuously refiltered (claim 6), (3) that the treatment solution is a palladium salt solution (claim 10). Clayton does teach changing the travel direction of the yarn to disrupt orientation of the individual filaments, and pulling the yarn through a reservoir, out and back through as part of this process. Figure 2 and column 1, lines 10-70. The treatment solution can be used to apply metal. Column 2, lines 1-5.

Suzuki teaches that when using a treatment solution to apply metal to a running polymer material, it is well known to pass the material through a reservoir around direction changing rollers. Figure 3 and column 4, lines 10-30 and 55-65. The described

treatment solution can be an electroless plating bath, reducing agents, etc. Column 4, lines 55-60. For example, the treatment solution can be an electroless bath to plate cobalt that has no surfactant. Column 9, lines 60-65 and column 10, lines 35-42. Suzuki also teaches that it is desirable to continuously filter and recirculate the treatment solution in the bath in order to remove foreign substances and/or dust so as to maintain the composition substantially identical to that of the original starting composition. Column 4, line 65 through column 5, line 20. Suzuki also teaches immersion of the substrate material in a palladium salt containing solution prior to the electroless plating. Column 9, lines 50-55 and column 10, lines 25-30.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton to apply metal to the fibers by passing the fibers through an electroless plating bath of a composition as described by Suzuki in order to provide a desirable metal coating to all the filaments of a yarn because Clayton teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated and that the coating can be a metal to polymer yarns, and Suzuki teaches that metals are conventionally applied to polymers running through plating baths over rollers using electroless plating baths, which can by surfactant free. Suzuki also provides the desire to continuously filter and recirculate such baths to desirably maintain the composition substantially identical to that of the original starting composition. As to the use of a palladium salt solution, it would further have been obvious to modify Clayton to use the bath and roller system to apply this solution

uniformly to each of the filaments as suggested by Suzuki in order to activate and sensitize all of the filaments for the later electroless coating because Clayton teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated, and Suzuki teaches that it is further desirable to coat a palladium salt solution onto the polymer by immersing prior to electroless treatment, and the suggestion would be to activate and sensitize all of the filaments, so that all are prepared to be coated later with the electroless solution. Furthermore, it would be obvious to continuously filter and recirculate this palladium salt solution as well as the electroless bath, so that its composition is desirably maintained substantially identical to that of the original starting composition.

9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton as applied to claim 1 above, and further in view of Iwami et al (US 3870551).

Clayton teaches all the features of these claims except further agitating the yarn and the treatment solution ultrasonically to increase disruption of the filaments and amount of coated surface area.

Iwami teaches that when using a treatment solution to apply metal to a multifilament yarn, it is well known to pass the material through a reservoir around direction changing rollers. Figure 1 and column 2, lines 45-55. Furthermore, Iwami teaches to provide a ultrasonic oscillator in the tank reservoir, which agitates the yarn to separate the filaments and allow the solution to penetrate between the filaments by

forcedly removing air present between the filaments. Column 1, lines 30-45 and column 2, lines 45-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton to further use an ultrasonic treatment of the yarn and solution as described by Iwami in order to provide a desirable coating to all the filaments of a yarn because Clayton teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated, and Iwami teaches that filaments of a yarn passing through solution to be coating can further desirably be spread so that all filaments can be coated by removing air through the use of an ultrasonic energy treatment.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view of Iwami et al (US 3870551).

Clayton in view of Suzuki teaches all the features of this claim except further agitating the yarn and the treatment solution ultrasonically to increase disruption of the filaments and amount of coated surface area.

Iwami teaches that when using a treatment solution to apply metal to a multifilament yarn, it is well known to pass the material through a reservoir around direction changing rollers. Figure 1 and column 2, lines 45-55. Furthermore, Iwami teaches to provide a ultrasonic oscillator in the tank reservoir, which agitates the yarn to

separate the filaments and allow the solution to penetrate between the filaments by forcedly removing air present between the filaments. Column 1, lines 30-45 and column 2, lines 45-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton in view of Suzuki to further use an ultrasonic treatment of the yarn and solution as described by Iwami in order to provide a desirable coating to all the filaments of a yarn because Clayton in view of Suzuki teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated, and Iwami teaches that filaments of a yarn passing through solution to be coating can further desirably be spread so that all filaments can be coated by removing air through the use of an ultrasonic energy treatment.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view of Nuzzi (US 3692494).

Clayton in view of Suzuki teaches all the features of this claim except treatment with an acid solution to etch. Suzuki does teach to immerse in an acid bath. Column 9, lines 55-60.

Nuzzi teaches that polymer materials and fibers can be electolessly coated. Prior to electroless coating, Column 2, lines 30-40 and column 3, lines 10-15. Nuzzi teaches

that it is well known to treat polymer materials with an acid bath to etch. Column 8, lines 1-15 and column 9, lines 35-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton in view of Suzuki to use the bath and roller system of Clayton to apply an acid solution uniformly to each of the filaments as suggested by Nuzzi in order to etch all of the filaments to prepare for the later electroless coating because Clayton teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated, and Suzuki teaches that it is further desirable to treat polymer with acid by immersing prior to electroless treatment, and Nuzzi teaches that acid baths are conventionally used to etch polymer material prior to electroless plating, and the suggestion would be to etch all of the filaments, so that all are prepared to be coated later with the electroless solution. Furthermore, it would be obvious to continuously filter and recirculate this acid solution as well as the electroless bath, so that its composition is desirably maintained substantially identical to that of the original starting composition.

12. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view of Mallory (US 3674550).

Clayton in view of Suzuki teaches all the features of these claims except treatment with an acid solution to etch (claim 9) and treatment with an alkaline sodium

borohydride solution to reduce previously deposited palladium (claim 11). Suzuki does teach to immerse in an acid bath. Column 9, lines 55-60. Suzuki also teaches that the bath system can be used for reducing agents. Column 4, lines 55-60.

Mallory teaches that polymer materials can be electolessly coated. Column 1, lines 10-30. Prior to electroless coating, Mallory teaches that it is well known to treat polymer materials with an acid bath to etch. Column 2, line 60 through column 3, line 5, and column 4, line 75 through column 5, line 2. Mallory further teaches immersing the substrate in a palladium salt bath to deposit palladium ions on the substrate. Column 3, lines 15-30, column 5, lines 5-11 and column 3, line 73 through column 4, line 10. Then, the substrate is treated in an alkaline reducing agent bath, such as alkaline sodium borohydride solution to reduce the deposited palladium ions to form a coating of palladium on the surface. Column 3, lines 25-45 and column 5, lines 10-20. Then electroless plating occurs. Column 3, lines 45-70 and column 5, lines 20-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton in view of Suzuki to use the bath and roller system of Clayton to apply an acid solution and an alkaline sodium borohydride solution uniformly to each of the filaments as suggested by Mallory in order to etch all of the filaments to prepare for the later electroless coating and reduce palladium ions on the filaments to prepare for the later electroless coating because Clayton teaches a method of passing yarn through a treatment bath using rollers so that all filaments are coated, and Suzuki teaches that it is further desirable to treat polymer with acid by

immersing prior to electroless treatment, and that the system can be used for reducing agent baths and Malloy teaches that acid baths are conventionally used to etch polymer material prior to electroless plating and alkaline sodium borohydride solution baths are conventionally used to reduce palladium ions on the substrate prior to electroless plating, and the suggestion would be to etch all of the filaments and provide palladium on all the filaments by reducing, so that all are prepared to be coated later with the electroless solution. Furthermore, it would be obvious to continuously filter and recirculate these acid solution and reducing agent baths as well as the electroless bath, so that the composition of each bath is desirably maintained substantially identical to that of the original starting composition.

13. Claims 12, 15, 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi (US 3962494) in view of Clayton et al (US 3460978).

Nuzzi teaches that polymer materials and fibers can be electolessly coated. Column 2, lines 30-40 and column 3, lines 10-15. Nuzzi provides a plurality of processing in the form of different baths, which would have specific amounts of different treating solutions. See for example, column 9, line 20 through column 10, line 15 (examples 2-3). Nuzzi provides that a first bath for treatment would be an acid solution to etch the substrate. Column 8, lines 1-15 and column 9, lines 35-45. Then a second bath for treatment would be a neutralizing (bathing) bath that would remove acid solution. Column 9, lines 45-47. A third bath for treatment in sequence would be a

catalyzing solution to deposit metal ions. Column 2, lines 30-40 and column 9, lines 55-65. A fourth bath for treatment in sequence would be reducing solution that reduces the metal ions on the substrate. Column 2, lines 30-40, column 9, line 65 through column 10, line 5 and column 11, lines 54-62. A firth bath for treatment in sequence would be an electroless plating bath to apply a metal coating on the substrate. Column 10, lines 10-15 and column 9, lines 5-20.

Claim 21: the reduction solution for the fourth bath can be alkaline sodium borohydride. Column 11, lines 54-62.

Nuzzi teaches all the features of these claims except for (1) using a multifilament yarn as the substrate and using for each of the baths a specifically sized reservoir with a set amount of treatment solution each with a yarn transfer system that guides the ingress and egress of the yarn from the solution and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments (claim 12), (2) the plurality of polymeric filaments (claim 15), (3) the varying tension (claim 18) and (4) the common speed (claim 19).

However, Clayton teaches a method of treating the surfaces of individual filaments in a multifilament yarn (strand). Figures 1-2 and column 1, lines 10-40. The yarn is immersed into a liquid treatment solution and the exposed surfaces areas of the individual filaments will be coated with the treatment solution. Figures 1-2 and column 1, lines 25-70. Clayton further teaches disrupting the orientation of the individual filaments (by changing the direction of the yarn movement) and coating all newly

exposed surface areas of each individual filament with the treatment solution. Figures 1-2 and column 1, lines 25-70. The disrupting step is repeated a number of times by repeated direction changes to the yarn. Figure 2 and column 1, lines 64-70. Then the yarn is withdrawn from the treatment solution. Figures 1-2 and column 2, lines 20-40. The treatment of all the filaments prevents inter-filament chaffing by surrounding the individual filaments with the coating composition. Column 1, lines 30-35. The yarn can be made of various materials including glass and polymers such as nylon and Orlon. Column 1, lines 70-72. Any type of coating can be applied, including resin, metal, sizings, etc. Column 1, line 70 through column 2, line 3. As shown in figures 1-2, each bath would have a set size.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi to use a bath system as described by Clayton to desirably coat multifilament polymer yarns with a metal coating by electroless plating, by using a bath as described by Clayton for each of the treatment baths of Nuzzi, because Nuzzi teaches that polymer materials, including fibers, can desirably be coated by metal by using a multistep multibath electroless plating process, and Clayton teaches that it is well known to be desirable to coat multifilament polymer yarns with materials such as metal and to provide a treatment solution bath system such that a specifically sized reservoir with a set amount of treatment solution with a yarn transfer system that guides the ingress and egress of the yarn from the solution is provided and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments so that

inter-filament chaffing of the filaments in the yarn strand is prevented. It would have been obvious to use the bath and roller system of Clayton to apply all the listed treatment solutions, including acid, neutralizing, catalyzing, reducing and electroless, because the desire would be to treat all of the filaments with each treatment solution, so that the resulting metal plating from the electroless solution is applied to each filament (each of which has been prepared to fully accept the electroless plating). As to the specific size of each reservoir and amount of material in each, and the tension and speed of the systems for each bath, it would have been obvious to one of ordinary skill in the art to optimize these conditions because Nuzzi teaches different exposure time of the material to each bath (see column 9, line 20 through column 10, line 15, for example), and the size of the reservoir, amount of material in the reservoir and the speed of the system would be optimized based on these exposure needs. Similarly, the tension would be coordinated with the speed, as Clayton requires the unrolling, passing and rewinding actions that would require some degree of tension on the yarn and the speed of pulling of the yarn is also well known to affect the coating amounts applied, and therefore one of ordinary skill in the art would perform routine experimentation to optimize the speed and tension on the yarn.

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and further in view of Iwami et al (US 3870551).

Nuzzi in view of Clayton teaches all the features of this claim except further agitating the yarn and the treatment solution ultrasonically to increase disruption of the filaments and amount of coated surface area.

Iwami teaches that when using a treatment solution to apply metal to a multifilament yarn, it is well known to pass the material through a reservoir around direction changing rollers. Figure 1 and column 2, lines 45-55. Furthermore, Iwami teaches to provide a ultrasonic oscillator in the tank reservoir, which agitates the yarn to separate the filaments and allow the solution to penetrate between the filaments by forcedly removing air present between the filaments. Column 1, lines 30-45 and column 2, lines 45-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton to further use an ultrasonic treatment of the yarn and solution as described by Iwami in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Clayton teaches a method of passing yarn through various treatment baths using rollers so that all filaments are coated, and Iwami teaches that filaments of a yarn passing through solution to be coating can further desirably be spread so that all filaments can be coated by removing air through the use of an ultrasonic energy treatment.

15. Claims 16 and 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and further in view of Hsu (US 5422142).

Nuzzi in view of Clayton teaches all the features of these claims except the use of aromatic heterocyclic rigid rod/PPTA filaments.

Hsu teaches that it is well known to desire to electrolessly plate fibers made from PPTA (poly (p-phenylene terephthalamide)). Column 3, line 10 through column 4, line 45.

The Examiner takes Official Notice that PPTA is a known aromatic-heterocyclic rigid rod polymer. If applicant disagrees, he should so respond on the record.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton to further polymer yarns made from PPTA (which are aromatic heterocyclic rigid rod polymers) fibers as described by Hsu in order to provide a desirable coating because Nuzzi in view of Clayton teaches a method of eletrolessly plating multifilament polymer yarns, and Hsu teaches that it is well known to desire to electrolessly plate PPTA fibers.

16. Claims 13 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and further in view of Mallory et al (US 3674550).

Nuzzi in view of Clayton teaches all the features of these claims except the acid solution being free of surfactant (claim 13) and the catalyzing solution being a palladium salt solution (claim 20). Nuzzi provides that the bathing (neutralizing) solution, catalyzing solution and reduction solution can be made without surfactant. See column 9, lines 5-15, 45-47 and 55-65.

Mallory teaches that polymer materials can be electolessly coated. Column 1, lines 10-30. Prior to electroless coating, Mallory teaches that it is well known to treat polymer materials with an acid bath to etch. Column 2, line 60 through column 3, line 5, and column 4, line 75 through column 5, line 2. The acid is described as merely a cleaner containing 10% HCl, with no description of any surfactant required. Column 5, lines 1-2. Mallory further teaches immersing the substrate in a palladium salt bath to deposit palladium ions on the substrate. Column 3, lines 15-30, column 5, lines 5-11 and column 3, line 73 through column 4, line 10. Then, the substrate is treated in an alkaline reducing agent bath, such as alkaline sodium borohydride solution to reduce the deposited palladium ions to form a coating of palladium on the surface. Column 3, lines 25-45 and column 5, lines 10-20. Then electroless plating occurs. Column 3, lines 45-70 and column 5, lines 20-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton to further use an acid solution without surfactant as described by Mallory in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Clayton teaches a pretreatment of acid

etching, and Mallory indicates that for pretreatment acid etching before electroless plating, all that is needed is a 10% HCl solution. Furthermore, it would have been obvious to modify Nuzzi in view of Clayton to further use a catalyzing solution of palladium salt followed by sodium borohydride reducing before electroless plating as suggested by Mallory in order to provide a desirable coating to all the filaments of the yarn, because Mallory teaches that when electroless plating, it is well known to provide palladium salt catalyzing baths followed by sodium borohydride reducing to prepare the surface for electroless plating.

17. The Examiner notes that on the PTO-892, the Clayton references is described as "MCGOVNEY CLARENCE L; et al", which is the second named inventor on the Clayton patent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KATHERINE BAREFORD
PRIMARY EXAMINER